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ABSTRACT

This study investigated playground activity levels of children in grades K-4 and compared levels of use of traditional and creative playground apparatus. The traditional playground area consisted of climbing bars, slides, ladders, chin bars, swings, see saws, and a merry-go-round. The creative playground contained tire hurdles, tire walk, tire climb, metal tunnels, fire poles, ladders, sand boxes, turning bars, balance beams, a slide, and two observation tower platforms. Movement activity was determined by observing the number of students on or engaged with playground apparatus. Analysis of observations revealed that the creative playground equipment was consistently more popular than the traditional with every age group, with significantly higher use of the creative play apparatus by the third and fourth grade groups. (JD)

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Movement Activity Levels on Traditional and Contemporary Playground Structures

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Abstract

The purposes of this study were to: (a) investigate playground apparatus activity levels of children in grades K-4 and (b) compare traditional and creative playground activity levels. One intact class from each grade level (N = 111) participated in the study. Each intact group was allowed 20 minutes per day (5 days) on each playground area (which was located at the experimental site). The order of playground presentation was randomly selected for the first day and alternated thereafter. Subjects were allowed to play as desired, with free-play equipment available on request. The analysis of play apparatus activity was performed using a piloted assessment instrument which recorded apparatus contact. Activity levels within each group were compared using creative and traditional apparatus activity scores and a paired t-test. Statistical analysis revealed that activity levels were significantly higher on the creative play apparatus for the third and fourth grade groups ($p < .001$). Analysis also revealed that after the second grade year, play activity on traditional apparatus decreased at increasing rates.

Movement Activity Levels on Traditional and Contemporary Playground Structures

It has been known for quite some time that the type of play environment and available equipment has an influence on the behavior of children. The types of play environments that seem to be in vogue at present are the creative (contemporary) and adventure models. However, since traditional playgrounds still represent the majority of school and public play areas, it seems appropriate that comparisons between the models be investigated.

Although specific components of the definition may vary, there seems to be a general consensus that traditional playgrounds consist primarily of single unit structures most frequently represented by see-saws, merry-go-rounds, slides, climbing apparatus and swings. The creative playground has been characterized as possessing more joined multi-structure apparatus (usually with sand areas and of homemade construction) which reportedly allow more motor responses, choice of activities and problem-solving opportunities (Gallahue & Vannier, 1978; Frost & Klein, 1979; Lederman & Trachsel, 1968). The adventure models have been distinguished from the other structures by having "movable items" such as wood, tires, crates, cable spools, etc. They have also been credited with stimulating creative play and problem-solving (Frost & Klein, 1979). Support, both indirect and direct, for contemporary play environments has been reported in the literature.

Hayward, Rothenberg, & Beasley (1974) revealed that school-aged children indicated a significantly greater preference for contemporary play environments over traditional ones using an interview technique. The authors also found significant differences in the length of time children spent on three different types of playgrounds. It was reported that children stayed the shortest periods at the traditional area and for longer periods of time on the contemporary and adventure playground. Frost and Campbell (1977) while observing second-grade children on a traditional and creative area revealed that on the traditional playground over 35 percent of the time was spent not engaged on the apparatus, compared to less than 25 percent on the creative structure.

The differences in any of the classifications (creative, traditional, adventure) of playgrounds would certainly appear to be based upon the types of equipment at each setting, which varies considerably within models.

Johnson (1935), after investigating the relationship between the amount of equipment on playgrounds and movement behavior of children, revealed that more movement occurred on the extensively equipped areas. Frost and Klein (1979) have stated that creative and adventure playgrounds foster more cooperative play and creativity than traditional environments based upon the nature of the equipment. Frost and Strickland (1978) after comparing the equipment choices of 138 kindergarten through second-graders reported that children prefer equipment that moves and can be adapted to their play schemes.

The purposes of this study were to: (a) investigate playground apparatus activity levels of children in grades K-4, and (b) compare traditional and creative playground activity levels.

Method

One intact class from each grade level (K-4) representing a middle class socioeconomic community participated in the study. The students were acquainted with both playground areas (creative and traditional) through daily recess periods. Two months prior to the experiment, subjects were assigned to play on the two play areas on an alternating basis during recess periods. Only the scores of subjects who started the two month treatment were used in the final analysis of data. The study consisted of 111 students (62% females, 38% males) with class sizes of 18-26 ($\underline{M}$ = 22). Each group was assigned 20 minutes per day (5 days) on each play area (total 10 days). The order of playground assignment was randomly selected (for each group) for the first session and alternated thereafter.

The sessions were conducted during the morning hours before lunch or regular organized physical education. There were no organized activities set up by the teachers, nor were the subjects told of the experiment. The subjects were told that they would be in a certain area on that day (creative or traditional - each on a different side of the school) and that it was a free-play session. As in the usual free-play routine, balls and ropes were available on request. Both play areas had similar space for extra "non-playground-apparatus" activities.

For this study, the traditional playground area consisted of single, separated apparatus units; climbing bar units-two, slides-two, horizontal ladder-one, chin bars-three, swings-three, merry-go-round-one, and see-saws-three. The creative playground consisted of: tire hurdles, tire walk, tire climb, and a single unit wooden frame apparatus consisting of: metal barrel tunnels-two, fire poles-two, ladders (vertical and horizontal), sand boxes-two, turning bars-four, balance beams-two, slide-one, and two 6 X 6 foot observation tower/platforms.

The degree of playground activity was assessed using a previously piloted assessment instrument similar to one created by Cooper (1974) and Hall (1971) called placheck. The pilot study conducted one month prior to the actual experiment monitored one intact class of first-graders over a ten day period (5 days on each of the two areas). Intraclass reliability analysis (Safrit, 1973) indicated an R of .86 on the traditional and .82 on the creative areas.

Movement activity was determined using the number of students on, and engaged with playground apparatus at each two-minute interval during each 20 minute session. A mean score was calculated using the 10 interval counts per session. The mean score for each of the five days was converted to a final mean score and then converted (also using the mean N for the five days) to reveal the percent of subjects which participated on the specific play area.

Activity levels within each group were compared using the creative and traditional activity scores (total M) and the paired t-test technique. It was not the purpose of this study to make comparisons

between grade levels, but to observe group behavior on two different types of play areas and state possible conclusions as to the difference.

Results and Discussion

Traditional and creative play apparatus activity levels are presented in Figure 1.

Insert Figure 1 about here

In the comparison of traditional and creative activity scores, *t*-test analysis indicated that activity was significantly ($p < .001$) greater on the creative playground apparatus for the third and fourth grade groups. Although not statistically significant, activity scores were also greater on the creative playground for the kindergarten, first and second grade subjects. The third and fourth grade groups, who generally were less active than lower grades on the traditional playground, were as active on the creative apparatus and represented the greatest activity increase from traditional to creative play areas.

Figure 1 reveals that after the second grade year, play activity on traditional apparatus decreased at increasing rates; second grade 70%, third grade 53%, and fourth grade 46%. This trend may have been partially due to the activity interests of the third and fourth graders. The third grade year represented the beginning of the introductory sport activities in the elementary school organized program. This type of activity introduction plus the social exposure to team sports has stimulated an early interest in sport-type activites. The majority of the

third and fourth grade "non-participants" were engaged in sport-type activities during the traditional and creative sessions. Results indicated however, that the creative apparatus did stimulate significantly greater activity levels than traditional or non-apparatus movement opportunities. It can be assumed as evidenced by the creative activity levels across grades that, interest in and movement on playground apparatus was best maintained (across grades) and stimulated by creative rather than traditional playground apparatus.

It should be noted that the experiment compared a specific design of traditional and creative play environments. The actual number of pieces of apparatus and their individual use (activity and preference) were not investigated. It may be that certain pieces of the environments were of particular interest to the subjects, perhaps influencing the activity level. It was assumed that the design of each environment consisted of standard components, found in several environments of the same concept.

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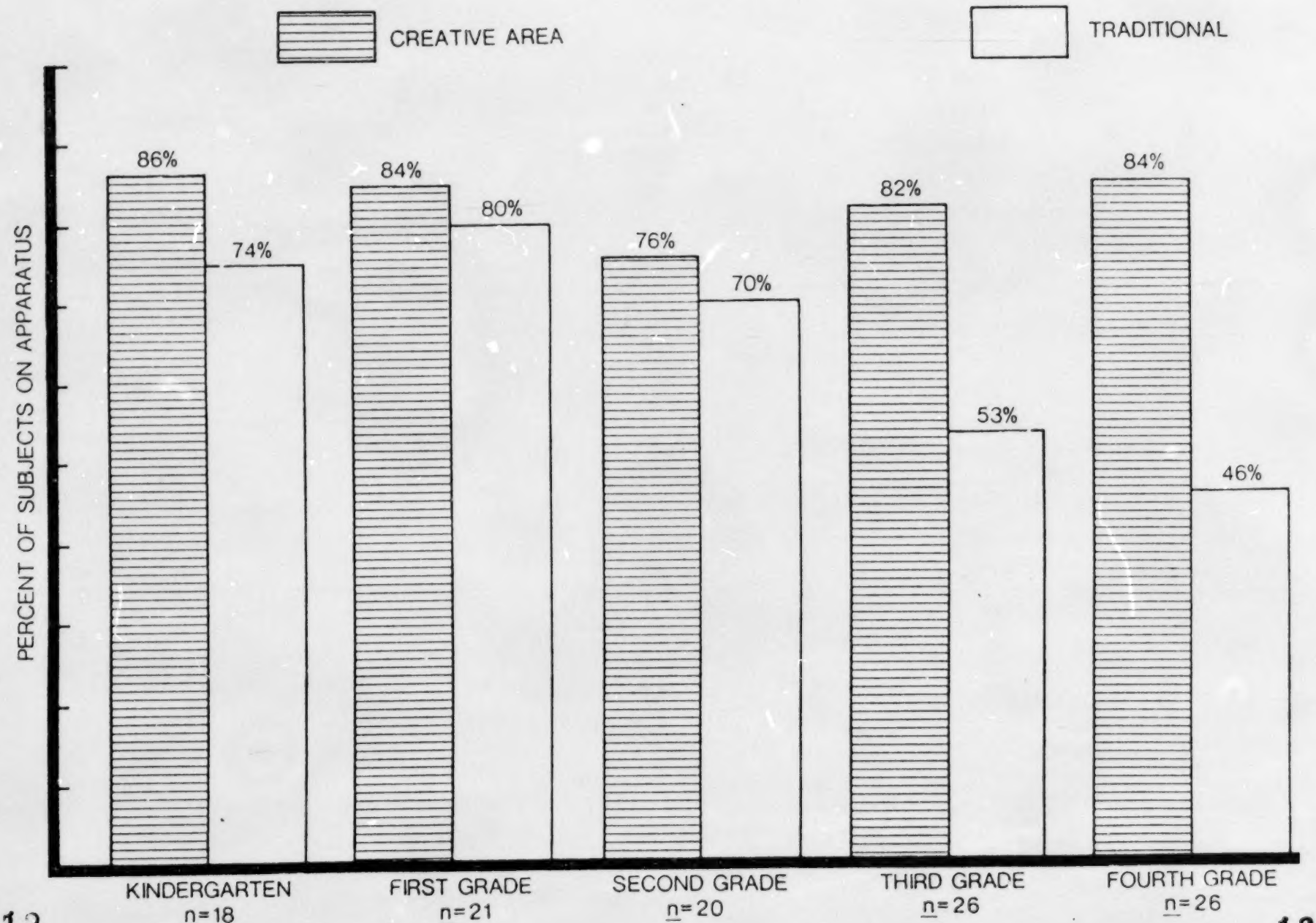
Figure Caption

Figure 1. Traditional and creative play apparatus activity levels.


CREATIVE AREA
TRADITIONAL
PERCENT OF SUBJECTS ON APPARATUS
86%
74%
84%
80%
76%
70%
82%
53%
84%
46%
KINDERGARTEN
n=18
FIRST GRADE
n=21
SECOND GRADE
n=20
THIRD GRADE
n=26
FOURTH GRADE
n=26